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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* VERONIQUE DOUIN, BENEDICTE CAZIN,  
and SANDRINE DECOSTER

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Appeal 2008-0587<sup>1</sup>  
Application 09/765,675  
Technology Center 1600

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Decided: June 25, 2008

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Before DONALD E. ADAMS, ERIC GRIMES, and LORA M. GREEN,  
*Administrative Patent Judges.*

ADAMS, *Administrative Patent Judge.*

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims 1-62 and 64-83, the only claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

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<sup>1</sup> Heard June 12, 2008.

## INTRODUCTION

The claims are directed to nanoemulsion compositions (claims 1-62, 64-72 and 78-83); non-therapeutic care processes (claims 73-76); and a process for thickening oil-in-water nanoemulsions (claim 77). Claims 1, 20, 24, and 64 are illustrative:

1. An oil-in-water nanoemulsion comprising oil globules with an average size of less than 150nm comprising at least one oil, at least one amphiphil[i]c lipid, and at least one cationic polymer comprising at least one hydrophobic block and at least one hydrophilic block, wherein said nanoemulsion has a turbidity ranging from 60 NTU to 600 NTU.

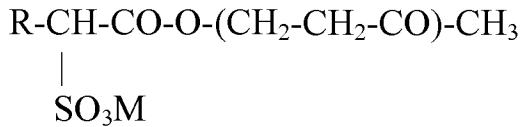
20. A nanoemulsion according to [claim 1, wherein said at least one amphiphilic lipid is chosen from nonionic amphiphilic lipids and anionic amphiphilic lipids], wherein said anionic amphiphilic lipids are chosen from:

- alkyl ether citrates,
- alkoxylated alkenyl succinates,
- alkoxylated glucose alkenyl succinates, and
- alkoxylated methylglucose alkenyl succinates.

24. A nanoemulsion according to [claim 1 further comprising at least one ionic amphiphilic lipid chosen from cationic amphiphilic lipids and anionic amphiphilic lipids chosen from:

- alkaline salts of dicetyl phosphate and of dimyristyl phosphate;
- alkaline salts of cholesteryl sulfate;
- alkaline salts of cholesteryl phosphate;
- lipoamino acids and salts thereof;
- sodium salts of phosphatidic acid;
- phospholipids; and

- alkylsulfonic derivatives of formula:



in which R, which may be identical or different in embodiments wherein more than one of said alkylsulfonic derivative is used, is chosen from C<sub>16</sub>-C<sub>22</sub> alkyl groups, and M is chosen from alkali metals and alkaline-earth metals] wherein said lipoamino acids and salts thereof are chosen from monosodium and disodium acylglutamates.

64. An oil-in-water nanoemulsion comprising oil globules with an average size of less than 150nm comprising at least one oil, at least one amphiphil[i]c lipid, and at least one cationic polymer comprising at least one hydrophobic block and at least one hydrophilic block, said nanoemulsion further comprising at least one aminosilicone.

The Examiner relies on the following prior art references to show unpatentability:

Ziegler et al.	US 5,135,748	Aug. 4, 1992
Simonnet	EP 0 780 114 A1	Jun. 25, 1997 (translated PTO 04-0438)
Matzik et al.	US 5,716,418	Feb. 10, 1998
Restle et al.	EP 0 842 652 A1	May 20, 1998 (translated PTO 04-0435)
Decoster et al.	JP H10-338899	Dec. 22, 1998 (translated PTO 04-0437)
Margosiak et al.	US 6,533,873 B1	Mar. 18, 2003

John L. Knowlton, *Emulsion theory in Poucher's Perfumes, Cosmetics and Soaps*, 3 COSMETICS 552 (Hilda Butler ed., 9<sup>th</sup> ed., Chapman & Hall, London) (1993).

## PROCEDURAL HISTORY

This is the second appeal in this application. For clarity, we reproduce claims 1 and 64 as they were presented in the first appeal, Appeal No. 2004-0378:

1. An oil-in-water nanoemulsion comprising oil globules with an average size of less than 150nm comprising at least one oil, at least one amphiphilic [sic] lipid, and at least one cationic polymer comprising at least one hydrophobic block and at least one hydrophilic block.
- ...
64. A nanoemulsion according to claim 1 further comprising at least one aminosilicone.

(August 26, 2004 Decision (Decision) 1-2.)

The rejections presented for review in Appeal No. 2004-0378 were as follows:

- Claims 1-19, 21, 22, 30-62, and 68-83 in view of Restle and Ziegler;
- Claims 23-29 and 63 in view of Restle, Ziegler, and Simonnet;
- Claim 20 in view of Restle, Ziegler, Simonnet, and Matzik; and
- Claims 64-67 in view of Restle, Ziegler, Simonnet, Matzik, and Decoster.

(Decision 3.)

The Board affirmed the rejection of claims 1-62, 68-71, and 83 and reversed the rejection of claims 63-67 and 78-82 (Decision 3).

In response Appellants amended their claims. Specifically, Appellants

- a) rewrote claim 68 in independent form; and

- b) amended claims 1, 68-73, 75, 77, and 78 to require that the claimed nanoemulsion has a turbidity ranging from 60 NTU to 600 NTU.

(*See* Amendments received October 25, 2004 and April 21, 2005.)

The Examiner responded by adding two new references (Margosiak and Knowlton) to the prior art relied upon in Appeal No. 2004-0378 and again rejected the claims as obvious. Accordingly, this appeal picks up where Appeal No. 2004-0378 left off.

The rejections as presented by the Examiner for our review in this Appeal are as follows:

1. Claims 1-19, 21-23, 28-62, and 68-83 stand rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, and Knowlton.
2. Claims 24-27 stand rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, and Simonnet.
3. Claim 20 stands rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, Simonnet, and Matzik.
4. Claims 64-67 stand rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, Simonnet, Matzik, and Decoster.

We affirm rejections 1-3 and reverse rejection 4.

FINDINGS OF FACT (FF)

1. Appellants do not dispute and therefore concede to the Board's conclusion that claim 1 of Appeal No. 2004-0378 is *prima facie* obvious in view of the combination of Restle and Ziegler (Decision 13).
2. Appellants do not dispute and therefore concede to the Board's conclusion that claim 20 of Appeal No. 2004-0378 is *prima facie* obvious in view of the combination of Restle and Ziegler (Decision 17).
3. Appellants do not dispute and therefore concede to the Board's conclusion that claim 24 of Appeal No. 2004-0378 is *prima facie* obvious in view of the combination of Restle and Ziegler (Decision 15).
4. The Board found that

[t]he examiner has not provided sufficient evidence or sound scientific reasoning to show that those skilled in the art would have been motivated to select the aminosilicone disclosed by Decoster as useful in a cosmetic detergent composition, and to add that aminosilicone to the oil-in-water nanoemulsion suggested by Restle and Ziegler. Therefore, the examiner has not made out a prima facie case of obviousness with respect to claims 64-67 [as presented in Appeal No. 2004-0378].

(Decision 18-19.)

5. The Board found that "Restle and Ziegler do not discuss the transparency or turbidity of the disclosed compositions and therefore would not have led those skilled in the art to expect that the composition resulting from their combination would have the recited property" of having a turbidity ranging from 60 NTU to 600 NTU (Decision 16).
6. "Restle discloses an oil-in-water nanoemulsion having oil globules with an average size of less than 150 nm" (Decision 6 (footnote omitted)). More specifically, Restle teaches that "[t]he oil globules of the emulsions of the

invention preferably have an average size ranging from 30 to 150 nm, more preferably from 40 to 100 nm, and even more preferably from 50 to 80 nm” (Restle 19).

7. According to Appellants’ Specification “[t]he term ‘nanoemulsion’ means a metastable oil-in-water emulsion . . . whose oil globule size is less than 150 nm . . . . The transparency of these emulsions derives from the small size of the oil globules” (Spec. 1: 16-21).

8. Restle teaches that “emulsions according to the present invention may include additives in order to improve the formulation’s transparency” (Restle 17; Ans. 8).

9. Restle teaches that transparency improving

additives are preferably selected from the group formed by:

- the lower C<sub>1</sub>-C<sub>8</sub> alcohols, such as ethanol;  
- glycols, such as glycerin, *propylene glycol*, 1,3-butylene glycol, dipropylene glycol, and polyethylene glycols containing between 4 and 16 units of ethylene oxide, and preferably between 8 and 12.

(Restle 17 (emphasis added).)

10. Appellants’ Specification exemplifies a nanoemulsion composition comprising, *inter alia*, propylene glycol and oil globules having a particle size of “about 63 nm”, which exhibits a “turbidity of 375 NTU” (Spec. 50: 3 and 16-18).

11. Margosiak states that “[c]larity or transparency is herein defined as having a turbidity less than or equal to 105 NTU (Nephelometric Turbidity Units)” (Margosiak 2: 2-4).

12. Knowlton teaches that “[t]he two main factors influencing the appearance of emulsions are the particle size of the dispersed phase

and the refractive index differences between the two phases in the system" (Knowlton 552: 3-6).

13. Knowlton teaches that "[i]f the refractive indices of the oil phase and the water phase are identical, then the system can be considered to be optically homogeneous and a totally transparent appearance will be observed" (Knowlton 552: 9-12).

14. Knowlton teaches that "a totally transparent appearance . . . is very rare in the cosmetics and toiletries industry and, assuming refractive index differences between the two phase[s] are present, the particle size of the dispersed phase becomes the most significant factor in determining emulsion appearance" (Knowlton 552: 13-16).

15. "When the particle size [of an emulsion] falls below 0.1  $\mu\text{m}$  a large proportion of the transmitted light passes through the body of the emulsion without hindrance, thus resulting in a translucent appearance" (Knowlton 552: 24-27).

16. Knowlton teaches that an emulsion that contains dispersed-phase particles which range in size between 1.0  $\mu\text{m}$  to 0.1  $\mu\text{m}$  has a blue-grey appearance (Knowlton 552: Table 19.2).

17. Knowlton teaches that "when the size of the dispersed phase particle falls to below 0.05  $\mu\text{m}$ , the particles themselves are too small to produce any light interaction. At this point, the system becomes transparent" (Knowlton 552: 24-27).

## DISCUSSION

1. Claims 1-19, 21-23, 28-62, and 68-83 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, and Knowlton.

The claims have not been separately argued and therefore stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). Claim 1 is representative.

Claim 1 before us on this appeal is the same as claim 1 of Appeal No. 2004-0378 but for the additional requirement that the “nanoemulsion has a turbidity ranging from 60 NTU to 600 NTU” (Claim 1).

It is undisputed that the combination of Restle and Ziegler suggests an oil-in water nanoemulsion comprising oil globules with an average size of less than 150 nm comprising at least one oil, at least one amphiphilic lipid, and at least one cationic polymer comprising at least one hydrophobic block and at least one hydrophilic block (FF 1). Restle and Ziegler, however, “do not discuss the transparency or turbidity of the[ir] disclosed compositions” (FF 5; App. Br. 19-20).

Therefore, the issue is whether a person of ordinary skill in the art would have reasonably expected a composition resulting from the combined teachings of Restle and Ziegler to have a turbidity ranging from 60 NTU to 600 NTU.

To begin, we look to Margosiak to provide some context for the large turbidity range set forth in Appellants’ claim 1. According to Margosiak, a clear or transparent composition has a turbidity less than or equal to 105 NTU (FF 11). With this in mind, we find that Knowlton teaches that there are two main factors influencing the appearance of emulsions: (1) the

particle size of the dispersed phase, and (2) the refractive index differences between the two phases in the system (FF 12).

According to Knowlton, a composition will exhibit a totally transparent appearance if “the refractive indices of the oil phase and the water phase are identical” (FF 13). Knowlton points out, however, that obtaining identical refractive indices in the oil and water phases of a composition rarely occurs in the cosmetic or toiletry industry and therefore the particle size of the dispersed phase is *the most significant factor in determining emulsion appearance* (FF 14).

While Knowlton points out that “it is foolish to generalize on the correlation of emulsion appearance with the size of the dispersed phase particles” (Knowlton 552: 16-18), Knowlton provides guidelines for this relationship (FF 15-17).

Restle teaches an oil-in-water nanoemulsion having oil globules with an average size of less than 150 nm (FF 6). More specifically, Restle teaches that “[t]he oil globules of the emulsions of the invention preferably have an average size ranging from 30 to 150 nm, more preferably from 40 to 100 nm, and even more preferably from 50 to 80 nm” (*id.*). Stated differently, Restle’s most preferred oil globule particle size is between 0.05 and 0.08  $\mu\text{m}$ .

According to both Knowlton and Appellants there is a relationship between particle size and the appearance of an emulsion (FF 7 and 14-17)<sup>2</sup>. Accordingly, we are not persuaded by Appellants’ argument that turbidity is

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<sup>2</sup> Accordingly, we are not persuaded by Appellants’ assertion that “it is . . . ‘foolish’ to generalize on the correlation between emulsion appearance, globule size, and turbidity” (App. Br. 17-18).

not an inherent property of an emulsion (App. Br. 15). According to Knowlton, an emulsion having a particle size in the range of 0.05-0.1  $\mu\text{m}$  would be expected to have a translucent appearance (FF 15), whereas those with particle sizes below 0.05  $\mu\text{m}$  would be expected to be transparent, and those with particle sizes in the range of 0.1-1.0  $\mu\text{m}$  would be expected to be blue-grey emulsions (FF 16-17). Thus, emulsions based on Restle's most preferred oil globule size would reasonably be expected to be translucent in appearance.

We know from Margosiak that compositions that are clear or transparent (e.g., an emulsion having an oil globule size of less than 0.05  $\mu\text{m}$ ) have a turbidity less than or equal to 105 NTU. Therefore, would a person of ordinary skill in this art reasonably expect an emulsion having an oil globule size in the range of 0.05-0.08  $\mu\text{m}$  and a translucent appearance to exhibit turbidity greater than 600 NTU? We think not. There is no evidence on this record to suggest that a person of ordinary skill in this art would have reasonably expected that by increasing the particle size of the oil globules in an emulsion by, at most, 0.03  $\mu\text{m}$  would result in an increase in turbidity of more than 495 NTUs. To the contrary, the preponderance of the evidence on this record suggests that an emulsion resulting from the combined teachings of Restler and Zeigler would be expected to have a translucent appearance and turbidity in the range of 60-600 NTU.

Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. . . . Whether the rejection is based on 'inherency' under 35 U.S.C. § 102, on 'prima facie obviousness' under 35 U.S.C.

§ 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products.

*In re Best*, 562 F.2d 1252, 1255 (CCPA 1977) (citations and footnote omitted). There is, however, no evidence on this record to suggest that an emulsion taught by the combined teachings of Restler and Zeigler would not have a turbidity in the range of 60-600 NTU.

In addition, we note that Restle teaches that the emulsion may contain additives to improve the formulation's transparency (FF 8-9). Claim 1 does not exclude the addition of transparency improving additives, such as those taught by Restle. In this regard, we note that Appellants' exemplified emulsion comprises propylene glycol (FF 10), one such transparency improving additive taught by Restle (FF 9).

Thus, the preponderance of evidence before us suggests that a person of ordinary skill in this art would appreciate that transparency or turbidity is a results effective variable (FF 7 and 14-17), which can be modified by the addition of transparency improving additives (FF 8-9) to achieve a desired value. There is, however, no evidence on this record to suggest that the nanoemulsion taught by the combination of references relied upon would not have a turbidity ranging from 60-600 NTU, with or without the addition of transparency improving additives.

Absent evidence to the contrary, of which there is none, we find that the combination of references relied upon provides a person of ordinary skill in the art with a reasonable expectation of producing a nanoemulsion that has a turbidity ranging from 60-600 NTU.

If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

*KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007).

In sum, we find no error in the Examiner's prima facie case of obviousness. Accordingly, we affirm the rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, and Knowlton. Claims 2-19, 21-23, 28-62, and 68-83 fall together with claim 1.

2. Claims 24-27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, and Simonnet.

The claims have not been separately argued and therefore stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). Claim 24 is representative.

Based upon the combination of prior art relied upon the Examiner concludes that:

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the composition of the combined references by adding the anionic amphiphilic lipids as taught by Simonnet because of the expectation of successfully producing a transparent cosmetic emulsion composition with well known surfactants in the art.

(Ans. 6.)

In response, Appellants assert that Simonnet “does not remedy the deficiencies of the combined disclosures of Restle, Ziegler, Knowlton and Margosiak”, because “Simonnet neither teaches nor suggests a nanoemulsion having a turbidity ranging from 60 NTU to 600 NTU as recited in the present independent claims” (App. Br. 21 (emphasis removed)).

For the foregoing reasons, we find no deficiency in the combination of Restle, Ziegler, Knowlton and Margosiak. Accordingly, we are not persuaded by Appellants’ assertion to the contrary.

Accordingly, we affirm the rejection of claim 24 under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, and Simonnet. Claims 25-27 fall together with claim 24.

3. Claim 20 stands rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, Simonnet, and Matzik.

Based upon the combination of prior art relied upon the Examiner concludes that

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the composition of the combined references by adding the anionic amphiphilic lipid as taught by Matzik et al. because of the expectation of successfully producing cosmetic composition with a known surfactants in the art.

(Ans. 6.)

In response Appellants assert that Matzik “does not remedy the deficiencies of the combined disclosures of Restle, Ziegler, Knowlton,

Margosiak, and Simonnet”, because “Matzik neither teaches nor suggests a nanoemulsion having a turbidity ranging from 60 NTU to 600 NTU as recited in the present independent claims” (App. Br. 22 (emphasis removed)).

For the foregoing reasons, we find no deficiency in the combination of Restle, Ziegler, Knowlton, Margosiak, and Simonnet. Accordingly, we are not persuaded by Appellants’ assertion to the contrary.

Accordingly, we affirm the rejection of claim 20 under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, Simonnet, and Matzik.

4. Claims 64-67 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, Simonnet, Matzik, and Decoster.

Based upon the combination of prior art relied upon the Examiner concludes that

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the composition of the combined references by adding the aminosilicone, as motivated by Decoster et al., because 1) Restle et al. and Decoster et al. are directed to hair and skin cleansing compositions, specifically shampoo and skin cleansing compositions; 2) Decoster et al. teach that the amino silicone/cationic polymer combination provides hair or skin conditioning benefits while retaining good washing properties; and 3) Restle teaches to incorporate skin conditioning active components, including silicones.

(Ans. 7.)

In response Appellants assert that Decoster teaches a specific composition in which

‘(A): A specified detergent base and (B): A conditioning system inclusive of at least one cationic polymer and at least one aminosilicone are used together.’ *See* Decoster at 12. The specified detergent base of Decoster requires ‘at least one sulfuric acid alkyl ether-type anionic surfactant and at least one C<sub>8</sub> ~ C<sub>20</sub> alkylbetaine-type amphoteric surfactant’ Decoster at 12.

(App. Br. 24 (emphasis removed).) According to Appellants there is “no suggestion or motivation to add the entire conditioning system and detergent base of Decoster in the composition . . . disclosed by Restle, Ziegler, Knowlton, Margosiak, Simonnet, and Matzik” (App. Br. 25 (emphasis removed)). We agree (FF 4).

Accordingly, we reverse the rejection of claims 64-67 under 35 U.S.C. § 103(a) as unpatentable over the combination of Restle, Ziegler, Margosiak, Knowlton, Simonnet, Matzik, and Decoster.

#### CONCLUSION

In summary, we affirm rejections 1-3 and reverse rejection 4. No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

Appeal 2008-0587  
Application 09/765,675

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